

A STUDY OF THE RELATIONSHIP EXISTING BETWEEN THE
ASSESSED VALUATION OF KANSAS FARM PROPERTY AND
THE VALUE OF ITS AGRICULTURAL PRODUCTS

by

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INTRODUCTION

Farm products were selling this year at prices never before witnessed by many people. According to the "Farm Real Estate Situation" issued by the Department of Agriculture in January, 1933, the index prices of commodities used in production stood 12 percent above those of pre-war level while the index for commodities used for consumption was 15 percent above. The disparity in the rates of decline of the index prices on commodities used for consumption and those sold off the farm together with the lower price level generally, has brought acute financial strain upon a great number of farmers. The increased quantity of physical produce required to liquidate taxes, interest and principal of indebtedness has been entirely disproportionate to the general decline in prices. As a result of this situation, the farm taxes in many counties of the state have become extremely burdensome during the past ten years of low income.

One of the surest evidences that the tax burden is becoming too great to be borne in some taxing districts, is the presence of a considerable amount of tax delinquent farm real estate during the last two or three years.

Agriculture, the main industry of the state has taken an enormous deflation so that the farmers have found it exceedingly difficult to pay their taxes.

It is interesting to note that tax reduction and revision, especially in the state of Kansas, has perhaps never attracted such widespread public interest as during the last year. This interest has resulted in attempts to reduce taxes and revise the public revenue system to meet the conditions resulting from the phenomenal increase in expenditures since pre-war days, and the precipitous decline of the general price level and income since 1929. The new income tax law and the reduction in the assessed value of real estate by one sixth should give relief to the farmer who has for the most part borne the brunt of rising taxes for twenty years.

As a rule the basis of assessment in this state and most of the states is upon true selling value of the land which in turn is based more upon hope than upon the income the land yields. While assessed valuation on most kinds of property tends to remain fairly uniform from year to year under normal conditions, property earnings of some classes fluctuate more than others. Returns from farming are especially subject to the influence of uncontrollable conditions such as weather

and prices. While the earnings of other properties are also subject to such conditions, the relation of values and earnings is more readily discernable and valuations more readily adjusted.

REVIEW OF LITERATURE

No previous study has been made of the relationship between assessed valuation of farm property and value of farm products produced from that property. Studies of farm taxation problems have been conducted every year for the past ten years by the United States Department of Agriculture and various state agricultural experiment stations placing emphasis on measuring the trend of taxes in relation to property values and income in agriculture. Also a number of other studies have been made of the valuation of farm property for taxation, revealing important inequalities in the assessed valuation of property. Data obtained on taxes in relation to net income from various parts of the country indicate a general similarity. A few studies emphasize problems of expenditures with the object of ascertaining to what extent it may be possible to secure greater economy in expenditure of public funds by improved administration of local government units. Studies have been made of the relation of benefits derived from governmental services and improvements to the tax burdens of various groups.

Special investigations to determine the relation between assessed valuation and the sales value of farm and city real estate were made in Kansas (1). An extensive study of the inequalities of assessments of real estate, both farm and city, as compared with sale value was made in 1923 by Professor Eric Englund of the Department of Agricultural Economics of Kansas State College. This study is based on actual sales of 10,307 farms and 10,231 parcels of city real estate, selected from sixteen counties fairly representative of the different sections of the state. The study reveals that inefficient assessments have been the cause of (1) inequalities between large and small properties, (2) inequalities in the same taxing unit among individual properties, and (3) inequalities among different taxing units such as between counties, between townships, and between cities. The study revealed that there was a discrimination in relative assessment between properties of low sales value and those of high value in favor of the large properties.

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- (1) Englund, Eric
1924. Assessment and Equalization of Farm and City Real Estate in Kansas.
Kansas State Agricultural Experiment Station Bulletin number 232. 69 pages.

Most emphasis has been placed on over assessment of small properties as a result of inequality in assessment. Professor Englund's analysis shows that the smaller farms were being over taxed to the amount of \$1,114,000. This is the amount actually levied on small farm properties which if the assessments were equitable, would have been levied on large properties. He also found that inequalities were greater in the last five years than the first five years, taking the ten-year period 1913 to 1922, thus showing retrogression rather than improvement toward equitable and just assessments.

All farms were divided into eight groups based on sales value, expressed on a percentage basis for each of these groups. Beginning with the grouping having the lowest value the percentages were as follows: 85.7, 76.7, 72.9, 70, 66.4, 65.3, 62.3, and 58.7. In other words as the sales value of property increased, the percentage of assessed valuation to sales value decreased.

"The fact that discrimination against smaller properties are very distinct, is a hindrance to independent farm ownership," says Professor Englund. He also concluded that the tendency towards retrogression in equalization are found at the local assessors point of contact with property. There were three probable reasons given for over-assessment of small properties: (1) the greater

impressiveness of large numbers, (2) the fact that small properties can easily be examined more closely by the assessor than large properties, and (3) the possibility of greater influence of large land owners over the assessor.

Similar studies, with similar results were made in Oregon (1928), Delaware (1928), Minnesota (1931), Texas (1932), New Jersey (1931), and Iowa (1929). In all the studies except Minnesota it was found that the ratio of assessed to true value was slightly higher in the case of urban real estate than the case of rural real estate.

Dressen(1) in the Oregon studies based on examination of assessed and sale values of some forty thousand urban and rural properties found marked discrepancies in individual assessments. Over-assessments of low-value properties relative to high value properties was general. Because of the presence of this and of other varieties of inequalities, it was discovered that less than one-third of the real estate of Oregon bears two-thirds of real estate taxes and the other one-half bears the remaining one-third of these taxes. Like Englund's study in Kansas, Dreesen has also accounted for the causes of inequalities in assessments of individual properties.

(1) Dreesen, W. H.
1928. Study in the Ratios of Assessed Values to
Sale Values of Real Estate Property in Oregon.
Oregon State Agricultural Experiment Station Bulletin
number 233.

Low ratios of assessed values to actual values generally with very low coefficient of correlation between the variables of the two values were found for rural and city properties.

Gabbard's investigation (1) is also confined to the inequalities in the taxation of farm land and city property. He found the average percentage ratio of assessed value to sales price of farm property in each of the eight counties studied ranged from 15.7 to 46.8 per cent. On this basis state taxes on the county having the high assessment level are relatively three times as high as those in the county with the low level so that inequalities are found between counties. Like other investigations in the same field, Gabbard recommended that as one factor, due consideration should be given to the productive capacity of farm and other property in order to equalize and reduce inequalities in assessments. Four reasons were given as factors having to do with the tendency toward considerable fluctuations in the average percentage ratio of taxes to rent from the year 1924 to 1929; (1) variations in prices, (2) changes in tax rates, (3) variations in the yield of crops especially in the principal crops which are cotton and wheat, and (4)

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- (1) Gabbard, L. P.
1932. Inequalities in Taxation of Farm Lands and City Property Due to Scope and Method in Assessment.
Texas State Agricultural Experiment Station Bulletin
458.

differences in local improvements, local expenditures and variations of crops.

The relation of taxes to earning power of farm land and city property is another consideration to use as a basis for measuring the burden of taxes on real estate. Admittedly, certain valid objections may be raised as to whether or not sales price alone provides the best single basis for measurement. Ultimately all taxes are paid out of current income. It should be apparent that if any appreciable part of taxes is regularly paid from capital, this source will then be impaired greatly and the very foundation of taxes will be weakened. It is therefore believed that the amount of taxes should bear a close relationship to the amount of net income. In connection with the study made in Texas, the cash income or cash rent was used as a basis for showing the relation of taxes to the amount deducting taxes and indebtedness against property. No relation between the two variables of cash rent and taxes was found. In equalized assessments Gabbard emphasized that due consideration should be given to the productive capacity of farm and other property. He also advocated the use of income data for representative farms and town properties.

The Minnesota study by Moore (1) confirmed the inequalities found in Kansas. There is also a similarity in the fields of study made in Delaware only that the Minnesota study came in later years. The tax valuations of cash rented farms were estimated by applying the tax valuation sales price ratio of farm real estate in various years and in various areas, to value of cash rented farms. The percentage of agricultural income required to pay taxes average in 1921 to 1928 at 12.6 per cent of gross income, 20.5 per cent in 1923 to 27.82 per cent in 1928. The results on the ratio of assessments to sales value ranged from 5 to 255 percent with a state average of 79.7 per cent. The results differ from Kansas results in that the farm real estate was assessed relatively higher than city real estate in 1926 and 1927 while Kansas study showed that the city real estate were assessed relatively higher throughout the entire period of the study.

A Delaware study completed in 1928 revealed similar tendency for the ratio of assessment to sales value to decrease as value of property increases.

(1)

Moore, H. R.
1930

Taxation as Related to the Property and Income of
Ohio Farmers.
Ohio Agricultural Experiment Station Bulletin
number 459.

(1) A comparison with respect to relative uniformity was made with Kansas and Oregon. It was found that assessments in Delaware are much more uniform than those in Oregon, and somewhat less uniform than those in Kansas.

Chambers' study of the land income and its relation to the farm land value, (2) was based on cash rents and land values on 653 farms in 657 counties leased in 1920. This constituted the basis for his statistical study, which revealed that market rents bear little relation to the incomes imputed to other lands when they are bought and sold. A few of the results of Chambers' study were concerned mostly with ratios of rent to value which was 2.1 to 11.3 per cent, ratio of gross cash rent to value was 3.2 to 10 percent, and the ratio of net cash rent to land value was 2.2 to 6.1 per cent. In this study, it will be noted that up to 1920, land incomes have increased steadily in the agricultural regions for the previous twenty years. Under this condition the net of returns of a given time at a given value is determined by the rate of capitalization

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- (1) Daugherty, M. M.
1928. The Assessment and Equalization of Real Property in Delaware.
Delaware Agricultural Experiment Station Bulletin 159
 - (2) Chambers, C. R.
1924. Relation of Land Income to Land Value.
American Economic Review. Vol. 16 pp. 67-398.

and the percentage of the value based upon expected increase in land value.

Hibbard (1) in his studies in Wisconsin concluded that the reasons why farmers are more heavily burdened are : (1) the failure of farm incomes to increase as nearly in proportion to tax increase as have city and village incomes, (2) the operation of the general property system during the period of deflation. He thinks that the general property tax system does not conform to the principle of "ability to pay" as a basis of taxation, reference to the fact that the amount of property one owns is by no means a fair measure of his ability to pay a tax for it does not correspond to the income received.

Another outstanding study concerning the farm tax problem is an investigation by Brannen (2) which compares the relation of taxes to farm earnings. He concluded that personal sacrifice is greater as a result of the low farm incomes than for the average income of non-farmers. He favored capitalized earnings as directly proportional to property incomes. Earnings value is more accurately

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- (1) Hibbard, B. H. and Allin, B. W.
1927. Tax Burden Compared.
Wisconsin Agricultural Experiment Station Bulletin
Number 393
 - (2) Brannen, C. O.
1928. Farm Tax Problems in Arkansas
Arkansas Agricultural Experiment Station Bulletin
Number 223.

determined for most property and the annual tax on this basis is more nearly proportional to current incomes and consequently less burdensome. Hibbard also recommended an improvement in assessment and equalization practice which would be of benefit to farmers and other real estate property owners. He recognized the fact that current income as a basis of assessment has some shortcomings but still he thinks that current earnings as a tax base has greater advantages than sale values.

The United States Department of Agriculture, working in cooperation with the agricultural experiment stations of a number of states has recently presented the results of studies covering property taxes on farms in these states as related to the net returns from the farms and the value of farm real estate. Combs' study (1) was a general investigation on the "Taxation of Farm Property". He made an interesting study of taxes and agricultural incomes, by finding the relation between net rent and taxes, analyzing the assessed valuations, and value of farm property in a number of states. The value per acre, net rent per acre on cash rented farms, and the relationship of taxes to value have been studied for fifteen states from 1919

(1) Combs, Whitney
1930

Taxation of Farm Property. U.S.D.A. Technical Bul. 172

to 1924. Butler county, Kansas is one of the fifteen counties in the study.

In the study, taxes between 1919 and 1924 were rather completely capitalized. In commenting upon the relationship of taxes to the value per acre, Mr. Combs says;-- "It is probable that an inter-relationship exists between taxes and value. An increase level of taxation that is expected to be permanent will be reflected in the price a buyer will offer for land since his return will be reduced by the taxes that he has to pay. It is impossible at present, however to segregate definitely the effects of the capitalization of taxes from the other factors that have caused land to decline in value since 1919". A careful analysis was made of the relation of income of cash rented farms in fifteen states, income from urban property in nine states, the assessed valuation and sales value of farm real estate, and values of cash-rented farms and owned-operated farms. The kinds and amount of taxes paid by farmers and the incidence and effects of farm taxes are discussed. Combs concluded that taxes paid by farmers in the United States was estimated in 1927 to be 901 million dollars, eighty three and eight tenths per cent of this was derived from general property tax, 5.5 per cent from automobile license, 7.2 per cent from gasoline tax, and

1.7 per cent from federal and state income taxes. The percentage of net rent on cash rented farms taken by taxes in fourteen of the states which Combs studied varied from 18 to 58 per cent. During 1922 to 1927, taxes took 30 per cent of the net income of such farms. It showed therefore that farm property is heavily taxed and that it and other real estate and certain other classes of tangible property bore more than a reasonable share of the cost of government.

Another study made by the department of agriculture is that by Wiecking on "Farm Real Estate Values and Farm Income". (1) Unlike Brannen, Wiecking believed that sale value will probably continue to be used as the basis of appraisal for there are difficulties which have so far been encountered in trying to establish values on farm real estate indirectly through income. There are three difficulties according to Wiecking which must be met in establishing income as a basis for appraisal: (1) a mistake of only fifty dollars capitalized at five per cent means one thousand dollars in valuation. Few farmers keep books, and estimates are subject to wide errors. (2) capitalization of management into land values is a doubtful

(1) Wiecking, E. H.
1930
Farm Real Estate Values and Farm Income.
Annals of American Academy. Volume 148; pp. 233-243

practice, and (3) it is sometimes rather difficult to define what the capitalizable income shall be and how to compute it.

Thus so far studies were made in nearly every state in the Union, on the general farm taxation problems. It is evident that an increasing desire to equalize the burden of taxation is the central theme of all farm and city real estate owners. With the decline of farm land values since 1920 together with the increasing tax levy, the burden of the farm land owners became more severe and consequently taxes constituted a great proportion of the selling value. In Kansas, the farming region in the southeastern part of the state is especially affected by the decline in the selling value of land. According to Kansas State Experiment Station Circular 159, from 1910 to 1929, taxes on real estate increased tremendously. Taxes paid each year upon all real estate amounted to .53 per cent of the selling value in 1910 while in 1929 the tax had increased to 1.9 per cent of selling value. (1)

(1) Howe, Harold
1931.

Trend of Real Estate Taxation in Kansas.
Kansas Agricultural Experiment Station Circular No. 159.

The United States as a whole in 1931-1932 (1) had the greatest decline in values of farm real estate since the period 1921-1933. According to Hibbard (2) the recent reductions in taxes are not in proportion to the reduced income of the farmers thus resulting in bankruptcy and tax delinquency among farmers.

PURPOSE OF STUDY

The purpose of this study is to find out the relationship existing between the assessed value of farm property and the value of farm products produced on that property. The secondary objective is to find if a relationship exists between tax delinquency and over assessment of farm property. An attempt is made to study the relation between the value of farm products and assessed valuation of farm property in Riley county for 1924 to 1928 inclusive. A similar study is also made for the state for the years 1924, 1926, 1928, and 1930.

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- (1) Stauber, B. R.
1933
Farm Real Estate Situation 1931-1932
U.S.D.A. Circular No. 261
- (2) Hibbard, B. H.
1933
Taxes a Cause of Agricultural Distress.
Journal of Farm Economics Volume 15 pp. 1-13.

Method Of Procedure and Sources of Material

For the study of the relation of the amount of farm products to the assessed valuation of farm property in Riley county, data were obtained from the "Statistical Roll Books for Assessors" for the fifteen townships in Riley county. These statistical roll books are available at the Department of Agricultural Economics, Kansas State College. An agreement exists between the State Board of Agriculture and the Department of Agricultural Economics which allows these books to be forwarded to Manhattan, to be used for research purposes.

Production of wheat and corn were not listed in the roll books since 1929. Consequently complete books available for this study were for the years 1924 to 1928. It was originally planned to cover the period of the study up to 1930. Data on production have been obtained from these general statistics relating to farms and to products of agriculture.

A copy of the source and nature of information given in the statistical roll books is shown in the appendix. Data on production of corn, wheat, dairy products, poultry and eggs, and meat from livestock sold and slaughtered were obtained and assembled in Table I, where the total amount

Table I. Value and Amount of Agricultural Products and the Amount of Assessed Valuation in 15 Townships in Riley County for the Years 1924 to 1928 Inclusive.

1924

Townships	Assessed Valuation				Production of Wheat		Production of Corn		Sale Va- lue of Dairy Prod	Livestock Sold and Slaughtered	Poultry & Eggs Sold
	Land	Personal	Total	Total Va- lue of Ag- Products	Wheat Bushels	Wheat in \$ At \$1.28	In Bushels	In \$ At \$1.06			
	(dollars)	(dollars)	(dollars)	(dollars)					(dollars)	(dollars)	(dollars)
1. Ashland	912,710	125,650	1,038,360	133,460.52	23,394	29,944.32	54,220	57,453.20	10,080	31,503	4,475
2. Bala	1,568,580	360,860	1,929,440	384,818.36	57,237	73,263.36	119,200	126,352.00	11,487	140,143	33,573
3. Center	719,970	193,160	913,130	273,751.10	18,295	23,417.60	100,875	106,927.50	2,615	126,150	14,637
4. Fancy Creek	903,260	223,665	1,126,925	252,648.54	31,318	40,087.04	76,585	81,116.50	4,165	109,285	17,995
5. Grant	937,190	143,720	1,080,910	174,647.40	14,620	18,713.60	73,530	77,941.80	7,007	59,352	11,633
6. Jackson	952,700	255,475	1,208,175	220,741.72	9,349	11,966.72	9,349	98,845.00	2,641	93,904	13,385
7. Madison	1,963,115	348,760	2,311,875	433,091.80	83,355	106,694.40	133,690	120,511.40	13,232	164,447	27,207
8. Manhattan	2,290,625	461,865	2,755,490	454,763.58	16,091	20,596.48	147,685	156,546.10	50,561	194,566	32,494
9. May Day	857,870	268,150	1,126,020	295,672.10	33,845	43,321.60	108,925	115,460.50	4,980	106,280	25,630
10. Ogden	926,320	163,870	1,090,190	203,933.08	35,586	45,548.08	92,500	98,050.00	7,095	89,573	8,667
11. Seven Mile	847,920	168,760	1,016,730	209,563.80	69,575	89,056.00	64,830	69,719.80	3,704	36,039	12,045
12. Sherman	806,210	160,965	967,175	208,559.80	20,000	25,600.00	73,580	77,994.80	3,970	86,025	14,970
13. Swede Creek	1,300,425	469,995	1,770,430	305,199.40	25,730	32,943.40	114,350	121,211.00	4,455	128,605	19,985
14. Wild Cat	1,147,080	201,170	1,348,250	239,344.40	33,825	43,296.00	70,740	174,984.40	24,260	85,498	12,306
15. Zeandale	1,606,210	323,160	1,929,370	385,637.80	35,650	45,632.00	137,230	145,463.80	10,543	169,809	14,190
	17,737,245.3	3,870,225.2	21,607,470.5	4,175,833.40	507,870	650,080.60	1461,130	1527,577.80	160,799	1160,784	263,192

Table I, (Continued)

1925

Townships	Assessed Valuation			Total value of Ag. Products	Production of Wheat		Production of Corn		Sale value of Dairy Product	Livestock Sold and Slaughtered	Poultry and Egg Sold
	Land	Personal	Total		Wheat Bushels	Wheat in \$ at \$1.46	In Bushels	In \$ at \$.71			
	(dollars)	(dollars)	(dollars)	(dollars)					(dollars)	(dollars)	(dollars)
1. Ashland	912,710	125,650	1,038,360	70,688.41	18,189	26,555.94	29,357	20,843.47	5,100	15,553	2,636
2. Bala	1,568,580	360,860	1,929,440	280,424.00	35,730	52,165.80	59,120	41,175.20	21,904	136,724	37,655
3. Center	719,970	193,160	913,130	205,487.04	12,329	18,000.34	57,270	40,661.70	3,435	127,270	16,120
4. Fancy Creek	903,260	223,665	1,126,925	177,489.09	18,767	27,402.72	34,385	24,413.35	10,458	98,550	16,665
5. Grant	937,190	143,720	1,080,910	155,891.20	6,945	10,139.70	86,750	61,592.50	7,170	66,074	10,906
6. Jackson	952,700	255,475	1,208,175	179,225.30	2,080	3,036.80	66,350	47,108.50	3,076	112,860	13,144
7. Madison											
8. Manhattan	2,290,625	461,865	2,755,490	332,109.51	11,033	16,108.18	21,223	15,466.33	60,700	200,804	39,431
9. May Day	857,870	268,150	1,126,020	279,591.80	41,155	45,486.30	87,950	62,444.50	6,076	142,199	23,386
10. Ogden	926,320	163,870	1,090,190	211,161.83	37,587	54,877.02	94,311	66,960.81	6,148	75,556	7,620
11. Seven Mile	847,920	168,760	1,016,730	208,691.45	47,675	69,605.50	105,445	74,865.95	4,745	46,720	12,755
12. Sherman	806,210	160,965	967,175	122,745.35	6,770	9,884.20	47,865	33,884.15	3,915	58,030	17,032
13. Swede Creek	1,300,425	469,998	1,770,430	350,538.35	13,720	20,031.20	113,665	80,702.15	4,200	124,660	22,940
14. Wild Cat	1,147,080	201,107	1,358,250	442,458.66	115,971	169,417.66	128,800	91,448.00	14,683	153,905	13,105
15. Zeandale	1,606,210	323,160	1,929,370	336,578.42	31,542	46,051.32	127,710	90,774.10	11,878	173,982	13,983
	15,779,130	3,521,565	19,295,595	3,742,441.60	424,515	568,662.70	1,060,201	881,337.51	163,497	1,432,687	247,288

Table I. (Continued)

1926											
Township	Assessed Valuation			Production of Wheat			Production of Corn		Sale Value of Dairy Products	Livestock Sold And Slaughtered	Poultry and egg sold
	Land	Personal	Total	Total va- lue of Ag. Products	Wheat Bushels	Wheat in \$ at \$1.21	In Bushels	In \$ at \$1.06			
	(dollars)	(dollars)	(dollars)	(dollars)					(dollars)	(dollars)	(dollars)
1.Ashland	846,180	121,210	967,390	83,371.97	15,478	19,192.72	63,255	47,441.25	8,370	33,305	5,063
2.Bala	1,431,705	381,585	1,813,290	353,914.27	30,548	37,887.52	146,225	109,668.75	10,753	149,418	46,187
3.Center	665,180	187,915	853,095	247,711.48	7,152	8,868.48	119,660	89,745.00	3,970	128,645	16,483
4.Fancy Creek	776,280	211,055	987,335	203,149.52	15,773	19,558.52	92,920	69,690.00	5,361	90,420	18,120
5.Grant	853,890	168,360	1,022,250	190,661.15	3,210	3,980.40	106,325	9,743.75	7,195	86,674	13,066
6.Jackson	874,870	239,210	1,114,080	241,181.15	760	942.40	130,445	97,433.75	2,260	11,800	128,345
7.Madison	1,718,775	347,940	2,066,715	427,137.32	49,643	61,557.32	180,200	135,150.00	17,375	185,402	27,653
8.Manhattan	2,101,104	439,225	2,540,395	398,774.40	4,435	5,499.40	171,152	128,364.00	68,131	170,326	31,454
9.May Day	786,325	212,995	999,320	423,804.16	4,934	6,118.16	165,380	117,285.00	81,818	193,213	25,370
10.Ogden	835,500	138,780	974,280	193,969.22	43,453	53,881.72	109,670	82,238.50	3,510	46,426	7,193
11.Seven Mile	730,960	162,720	893,680	191,869.51	46,174	57,255.76	93,265	69,948.75	7,010	46,500	11,155
12.Sherman	725,515	161,900	887,415	217,660.50	3,600	4,464.00	121,650	91,237.50	5,450	21,300	95,209
13.Swede Creek	1,175,980	339,070	1,515,050	295,342.85	7,960	9,876.60	162,375	111,781.25	4,440	143,815	25,430
14.Wild Cat	1,072,685	236,320	1,309,005	232,363.75	18,825	23,343.00	86,745	65,058.75	19,463	111,782	12,717
15.Zeandale	1,484,830	300,850	1,785,680	323,001.62	20,363	25,250.12	62,830	47,122.50	12,776	223,960	13,803
	16,079,815		19,928,980			337,676.12		1,342,308.75		1,642.986	478,058
		3,649.165		4.023,912.87			1,803,097		252,884		
					272,313						

Table I. (Continued)

1927											
Townships	Assessed Valuation			Production of Wheat		Production of Corn		Sale value of Dairy Products		Livestock	Poultry
	Land	Personal	Total	Total Value of Ag. Products	Wheat Bushels	Wheat in \$ at 1.21	In Bushels	In \$ at \$0.85	of Dairy Products	Sold and Slaughtered	and Egg Sold
	(dollars)	(dollars)	(dollars)	(dollars)					(dollars)	(dollars)	(dollars)
1. Ashland	864,180	121,210	967,390	230,499.85	16,365	17,801.65	193,372	167,776.20	7,635	34,312	3,485
2. Bala	1,431,705	381,585	1,813,290	223,002.97	39,982	48,378.22	17,055	14,496.75	9,521	113,937	36,670
3. Center	665,180	187,915	853,095	191,106.77	9,387	11,358.27	5,370	4,564.50	5,512	150,995	18,671
4. Fancy Creek	776,280	211,055	987,335	159,472.81	20,885	25,272.06	12,695	10,790.75	5,430	99,949	18,481
5. Grant	853,890	168,360	1,022,250	151,195.50	5,630	6,812.30	40,932	34,792.20	9,582	86,719	13,290
6. Jackson	874,870	239,210	1,114,080	149,077.40	2,690	3,254.90	14,150	12,027.50	3,090	113,920	16,785
7. Madison	1,718,775	347,940	2,066,715	327,632.85	62,791	75,977.11	28,935	24,594.75	22,100	171,101	33,860
8. Manhattan	2,101,140	439,225	2,540,395	411,212.08	5,473	6,622.35	82,275	69,933.75	63,854	206,701	34,050
9. May Day	835,500	138,780	974,280	146,323.26	15,080	18,246.80	11,895	10,110.75	11,099	187,620	28,903
10. Ogden	786,325	212,995	999,320	255,979.53	27,686	48,897.31	22,285	18,942.25	7,900	38,570	11,750
11. Seven Mile	730,960	162,720	893,680	126,079.56	40,411	4,216.85	21,850	18,572.50	5,805	88,305	19,530
12. Sherman	725,515	161,900	887,415	136,429.35	3,485	16,673.80	15,650	13,302.50	3,925	107,725	27,800
13. Swede Creek	1,175,980	339,070	515,050	73,526.30	13,780	15,312.55	34,755	29,541.75	24,980	117,770	15,540
14. Wild Cat	1,072,685	236,320	1,309,005	200,754.30	12,655	21,719.50	62,830	53,405.50	12,472	223,960	18,290
15. Zeandale	1,484,830	300,850	1,785,850	327,397.00	17,950	33,500.06	36,612	31,120.20	5,575	65,344	10,784
	16,079,815	3,649,165	19,928,980	3,111,088.56	249,241	354,043.71	604,661	513,961.85	198,480	17,899.79	307,889

Table I. (Continued)

1928											
Assessed Valuation				Production of Wheat		Production of Corn					
Townships	Land	Personal	Total	Total value of Ag. Products	Wheat Bushels	Wheat in \$ at \$1.00	In Bushels	In \$ at \$0.86	Sale value of Dairy Products	Livestock Sold and Slaughtered	Poultry & Egg Sold
	(dollars)	(dollars)	(dollars)	(dollars)					(dollars)	(dollars)	(dollars)
1. Ashland	918,130	113,070	1,031,200	144,503.22	29,482	29,482	67,327	57,901.22	8,305	40,595	8,221
2. Bala	1,542,380	425,835	1,968,215	442,210.08	86,744	86,744	199,578	171,637.08	12,811	151,146	41,237
3. Center	720,180	216,470	936,650	275,223.50	92,750	92,750	131,025	112,671.50	6,932	42,989	19,881
4. Fancy Creek	845,190	253,025	1,098,215	293,170.40	40,823	40,823	125,190	107,663.40	6,318	120,160	18,206
5. Grant	921,130	202,155	1,123,285	227,815.00	11,475	11,475	128,850	111,181.00	11,305	78,883	13,342
6. Jackson	949,020	291,170	1,240,720	282,747.50	11,770	11,770	147,125	126,527.50	4,895	124,505	15,050
7. Madison	1,854,630	409,645	2,264,275	525,226.20	3,550	103,550	243,770	209,642.20	30,790	148,604	30,550
8. Manhattan	2,176,590	547,990	2,724,580	504,789.50	7,222	7,222	201,475	173,268.50	68,275	226,916	29,108
9. May Day	859,990	289,570	1,149,560	403,148.10	50,340	50,340	175,585	151,003.10	13,495	172,745	15,565
10. Ogden	904,740	151,580	1,056,320	247,895.50	52,385	52,385	119,725	102,973.50	7,282	7,101	14,155
11. Seven Mile	793,100	193,195	986,295	229,857.00	62,580	62,580	115,550	99,373.00	10,602	46,232	11,065
12. Sherman	784,355	204,845	989,200	233,615.00	6,760	6,760	124,250	106,855.00	7,255	93,195	19,550
13. Swede Creek	1,269,360	432,755	1,702,115	393,280.20	35,515	33,515	211,370	181,778.20	6,885	143,320	27,782
14. Wild Cat	1,155,735	244,445	1,400,180	267,932.60	19,025	19,025	140,510	120,838.60	10,589	94,330	13,150
15. Zeandale	1,609,060	357,415	1,966,475	481,951.00	28,187	28,187	171,400	147,404.00	102,600	187,920	15,840
	16,803,350	4,123,430	21,637,085	5,941,374.80	636,608	636,608	2,302,730	1,981,347.80	308,339	1,742,755	292,705

of production has been converted into dollars. Prices of corn and wheat for the various years up to 1929 were taken from the United States Department of Agriculture Year Book for 1930. Table 58 in the year book gives prices of corn and the prices of wheat were taken from page 611 of the same book. Thus the prices for each of the years in the study were used as a basis in converting the amount of farm products into dollars for all the years from 1924 up to 1928.

Data on assessed valuations have been taken from the biennial report of the Kansas State Board of Agriculture for the years 1924, 1926, and 1928. Copies of these biennial reports are available at the library. The assessed value of farm land plus the assessed value of personal property are taken for the townships only. These assessed values of land and personal property constitute the amount of assessed valuation which was used to find the relationships between the amount of farm products and the assessed valuations of the farm property.

While assessed valuations of farm property are available from the biennial report only for even years, it was therefore necessary to use the same assessed valuation for the odd year immediately following the given even year.

In other words the assessed valuation for 1924 was used as a basis for 1925 and the assessed valuation for 1927 is the same as for 1926. The amounts of products for each of the years from 1924 up to 1928 were taken from the roll books. The amount of farm products and the amount of assessed valuations for each township was computed for each of the fifteen townships in Riley county.

In the study for the state, all data used in the study were taken from the biennial reports of the State Board of Agriculture. Both assessed valuation and amount of farm products are found in these books. The assessed valuations of land and personal property were taken only for the townships in the county so that the data taken are purely on the basis of farm property. All valuations for cities both personal and on land were not included in the study. All the value of crops and livestock products are listed separately in the books and these two values are taken as the amount of farm products used in the study for each county in the state.

No available data for the study of real estate tax delinquencies could be found in state reports. Data on this subject secured for a limited number of years in certain counties have been from an unpublished report on the study

of tax delinquencies by the Department of Agricultural Economics of Kansas State College. Data are available for the years 1928 and 1929 in 53 counties fairly well distributed over the different farming areas of the state. Data for 1928, 1929, and 1931 are available in 33 counties also well spread over every area in the State. The percent of delinquency for each of the years and the results are carefully analysed.

The ratio between the value of farm products and the assessed valuations of farm property were obtained for each of the 105 counties of the state each year for 1924, 1926, 1928, and 1930. The resulting percentage ratios were further analysed. Four methods or ways were used to measure the existing relationship between the two variables. These were percentage ratios, index numbers, coefficient of correlation, and measures of dispersion.

A complete study of the relationship of the value of farm products and assessed valuation for 105 counties is hard to accomplish due to the amount of time needed. A random sampling was therefore necessary. A county from each area was selected without any particular scheme for selection employed except that the most centrally located county in each area was chosen. This is deemed to be a good cross section of the state.

RESULTS OF THE STUDY

In order to show the relationship existing between the value of agricultural products and the assessed valuation of farm property, a definite length of time and a given place has been determined. The first part of the study is confined to one county which is Riley and the other part of the study is for the state. The study in Riley county differs from that of the state in that data used for the amount of farm products have been actually obtained from the assessors' rolls by townships and that the years covered were from 1924 to 1928 inclusive. All the necessary data in the study for the state were obtained from the biennial reports of the State Board of Agriculture for the years 1924, 1926, 1928, and 1930.

The Relationship of the Value of Farm Products to the Assessed Valuation of Farm Property in Riley County for the years 1924 to 1928.

Four different methods were used in this study to measure any existing relationship between farm products and the assessed valuation of farm property.

One way of measuring the existing relationship of the two variables is by finding the percentage ratio by adding the total amount of farm products for each year in each township and this total divided by the assessed valuation for the corresponding township each year from 1924 to 1928.

Table I shows the detailed amount of production and assessed valuation for each of the years from 1924 to 1928. It will be noted that production for 1925 is for only 14 townships due to the lack of available data on one township for that year.

Ratios of the value of farm products to the assessed valuation are tabulated for each year as found in Table II. Results of percentage ratio in 1924 ranged from 12.85 to 29.97 per cent. The mean average for the county for that year was 19.32 per cent. The standard deviation is 4.1 and the coefficient of variation is 21.2. For 1925 the percentage ratios in each of the fourteen townships are more irregular than in 1924. Ratios ranged from 3.66 per cent to 32.8 per cent with a mean average of 17.16 per cent for the county. It will be noted that the standard deviation and coefficient of variation are higher than those for 1924. The probable reason for these years being so low may be due to the fact that the assessed value of all property, land and personal, has been based from the even years' valuation preceding the years of 1925 and 1927.

The total amount of farm products and the amount of assessed valuations for each township in the five year period 1924 to 1928 is in Table IV. Ratios on farm products

Table II.

Percentage Ratio of the value of Farm Products to
Its Assessed Valuation for the five year Average
1924 to 1928 inclusive.

Riley County	% 1924	% 1925	% 1926	% 1927	% 1928	Five Year Average
1. Ashland	12.85	3.66	8.61	23.87	14.01	13.10 %
2. Bala	19.09	15.05	19.51	12.29	23.02	17.90
3. Center	29.97	22.5	29.03	22.4	29.38	26.27
4. Fancy Creek	22.41	15.74	20.57	16.15	26.68	20.40
5. Grant	16.16	14.42	18.65	14.79	20.28	16.80
6. Jackson	18.28	14.83	18.95	13.38	22.79	18.40
7. Madison	18.73		20.66	15.85	23.17	19.60
8. Manhattan	16.53	12.05	15.69	16.18	18.89	15.80
9. May Day	26.25	19.36	42.40	25.61	35.0	28.80
10. Ogden	18.69	20.52	19.90	15.01	23.46	19.30
11. Seven Mile	20.61	21.57	21.46	14.1	23.30	20.00
12. Sherman	21.56	14.15	24.52	15.37	23.61	19.50
13. Swede Creek	17.23	32.81	19.49	9.54	23.10	20.43
14. Wild Cat	17.81	17.44	17.75	15.33	16.99	17.06
15. Zeandale	19.98	16.7	18.09	18.33	24.50	19.70
Mean Average	19.32	17.16	20.19	16.54	20.74	18.79

Table IV. The Ratio of Agricultural Production to Assessed Valuation of Farm Property in Tabulated Form for the Five Years Time 1924 to 1928 in 15 Townships in Riley County.

Townships	Assessed Valuation Average for 5 years	Agricultural Prod. Average for 5 Years	Percentage Ratio
1. Ashland	\$1,008,540	\$132,610.99	13.1 %
2. Bala	1,890,735	338,875.73	17.9
3. Center	893,820	238,654.77	26.7
4. Fancy Creek	1,065,921	217,186.07	20.4
5. Grant	1,065,327	180,042.05	16.8
6. Jackson	1,177,395	215,594.61	18.4
7. Madison	2,177,395	427,772.04	19.6
8. Manhattan	2,663,230	420,239.81	15.8
9. May Day	1,080,048	331,639.14	28.8
10. Ogden	1,037,054	200,656.77	19.3
11. Seven Mile	961,423	193,211.66	20.0
12. Sherman	939,676	183,802.00	19.5
13. Swede Creek	1,654,515	277,797.42	16.9
14. Wild Cat	1,342,938	274,570.74	20.4
15. Zeandale	1,879,315	370,913.16	19.7

Mean=19.5
S.D.=3.75
 $\frac{100}{M} = 19.5$

to assessed valuations were calculated and the mean deviations standard deviations, and coefficient of variations were obtained. Table III. shows the total amount of farm products and assessed valuations for years 1924 to 1928 in Riley county. The trend of ratios found is graphed in Figure 1. The two years 1925 and 1927 are years when the percentage ratios were the lowest. We can see that in 1928 the highest percentage ratio was reached with 1926 and 1924 a little lower in percentage ratios.

Another method used to measure the existing relationship of the farm products and assessed valuation is by comparing the assessed values and farm products for each of the given years by means of index numbers. Since the assessed valuation of farm property is based upon true value of the property or selling value which is capitalized upon future anticipated income and not upon current earnings, it will be of interest to know as to what extent current earnings have any relation to the true value of the property. Relationship is measured by index numbers where the 1924 values were used as a basis of 100 per cent for farm production and assessed valuation. The totals of assessed valuation and amount of farm products were compared and trends of both

Table III.

Riley County

Ratio of Agricultural Products to Assessed Valuation 1924, 1925,
1926, 1927, and 1928.

Total Assessed Value of Farm Property (Personal & Land) In Solears		Index No.	Ag. Production	Index No.	Ratio Ag Products Ass. Value
1924	\$ 21,607,470.00	100	\$ 4,175,833.40	100.	19.32%
1925	19,295,595.00	89	3,263,080.41	78.	17.16%
1926	19,928,980.00	92.1	4,023,921.87	98.	20.19%
1927	19,928,980.00	92.1	3,181,288.56	76.2	16.54%
1928	21,637,085.00	100.5	5,181,374.80	142.	20.74%
Ave. 5	<u>102,398,110.00</u> 20,479,622.00		5 <u>20,585,490.04</u> 4,117,098.01		18.79%

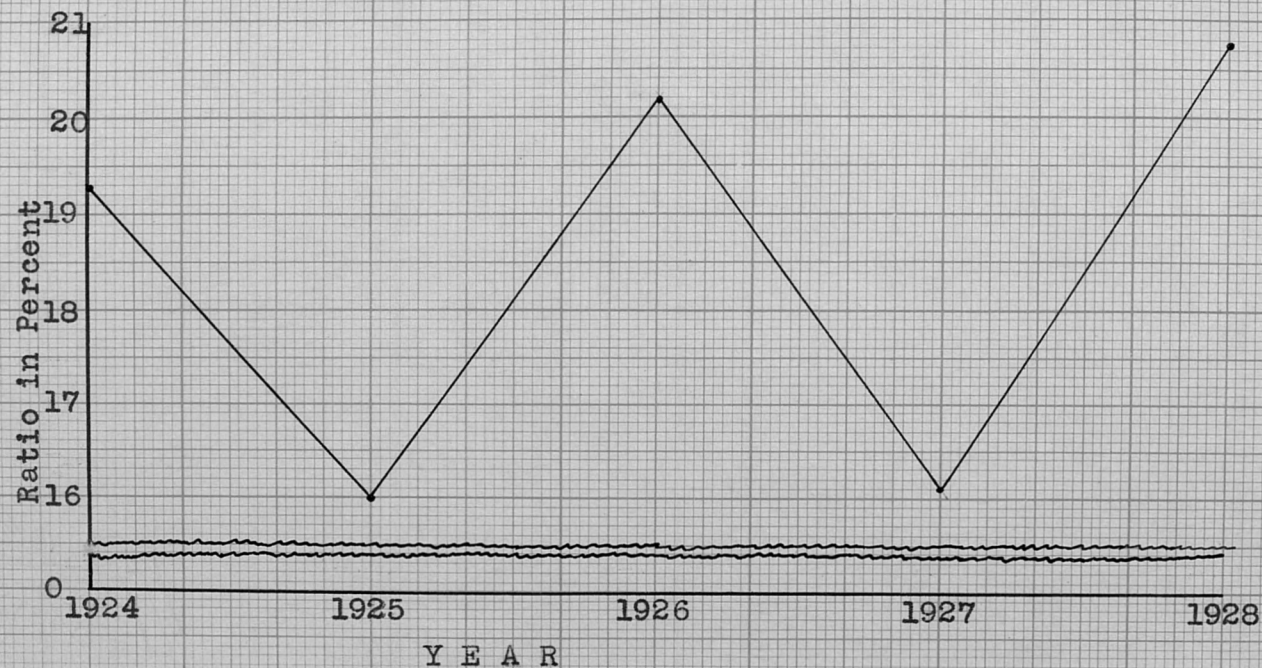


Fig.1. The trend of the Ratio of the Value of Farm Products to assessed value.
Average of 15 townships of Riley County from 1924 to 1928.

values for 1924 to 1928 are shown on the graph in Figure 2. The assessed values was fairly uniform while the amount of farm products has shown abrupt up and down trends. The graph shows how the two values behave in times of low and high prices of commodities. In 1928 when price level of commodities was up, the assessed values were up too but no proportional increase and decrease are shown by the two variables.

It is true that both of the index numbers were down in 1925 but the number of points in the decrease of index numbers had very little relation. The 1925 index number for assessed valuation was 89 per cent of 1924 while the index number for the amount of farm products was only 78 per cent of 1924. The former went down 11 points while the latter dropped 22 points or a drop of twice as much as the assessed valuation. Again during the period of high commodity prices in 1928 the index number of assessed valuation went up 8 points while the index number of the amount of farm products soared to 6.6 points more than the year 1927. This shows what little relationship exists between the assessed values of farm property and the amount of products from this property. The amount of farm products surely respond to several factors. Some of these factors are:-- weather changes, supply of farm commodities, and the changes

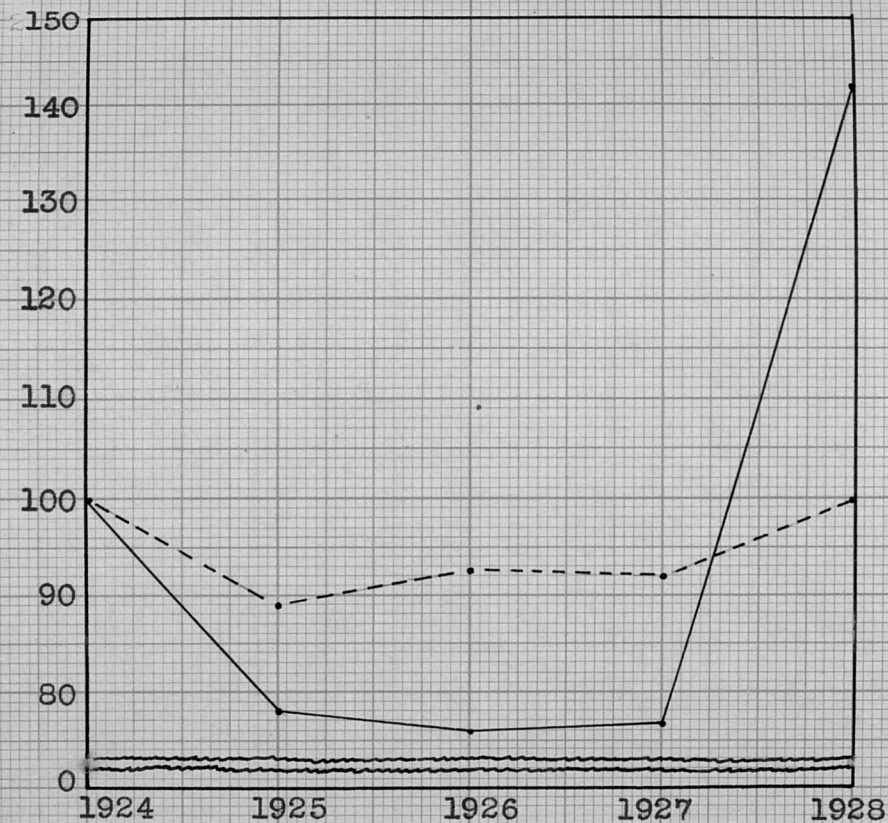


Fig.2. The Relation of Assessed Valuation of Farm Property in Riley County and the Value of its Production from 1924 to 1928.

— Trend of value of production from 1924 to 1928 in Riley County.
 ---- Trend of assessed valuation of the land from 1924 to 1928 in Riley County.

in general price level. The farmer can not adjust the amount of taxes paid to the amount of earnings he receives for the current year because assessed valuations are not based upon current earnings but it is based upon long time prospective income. Unless more consideration is given to the current earnings as a factor in appraising real estate for assessment, the farmer will always suffer the heavy burden especially during years of low prices.

MEASURES OF DISPERSION

The percentage ratio has been obtained but the results do not show very much except the fact that in some years the farm products may show increase of percentages. In order to show how the results on the ratio work out, measures of dispersion have been used to show the existing relationship between the two values. From the results on ratios, the mean, standard deviation, and coefficient of variation have been obtained. The results of these measures of dispersion are shown in Table VII. There is a very irregular result obtained in the standard deviations and means. The standard deviation shows how the items or ratios are distributed around the means which is the average. The coefficient of variation compares the dispersion of the series where the means differ considerably in size and where

Table VII

	Standard Deviation	Coefficient of Variation	<u>Ag. Products</u> <u>Assessed Value</u> Mean Ave.	Percent of Correlation
1924	4.1	21.2	19.32	91.
1925	6.24	36.36	17.16	54.4
1926	6.93	34.3	20.19	67.5
1927	4.14	25.	16.54	80.0
1928	5.37	25.8	20.74	88.3

The relation of agriculture production to the assessed valuation of farm property in 15 townships of Riley county for 1924 to 1928 expressed by means of standard deviation, coefficient of variation and correlation.

the variations relative to the mean is important. Results on standard deviations and coefficient of variations are irregular which indicates that there is no uniformity in the percentage ratio of the amount of farm products to the assessed valuation.

COEFFICIENT OF CORRELATION

The best method of measuring the existing relationship of the amount of farm products and assessed valuation is by means of the product-moment correlation which actually is the linear correlation. A measure of relationship has been obtained by listing the pairs of associated data of farm products and assessed valuations. The means and deviations from the means were obtained and results of coefficients are shown in Table VIII. The total amount of farm products and assessed valuation for 1924 to 1928 were listed for each township and a scatter diagram was made as shown in Figure 12. It will be noted that Riley county shows a fairly good result on the correlation coefficients especially in 1924 and 1928 where the coefficients were 91 and 88 per cent respectively. The years 1925 and 1926 show only a small degree of relationship as results give only 54.4 and 67.5 percent.

The Relation Between the Value of Farm Products to the Assessed Value of Farm property for the State.

Table VIII

Percentage of Correlation for the 12 Areas

1924	31.3%
1926	50.1%
1928	17.4%
1930	39.5%

The degree of existing relationship between assessed valuation and the value of farm products has been shown for the fifteen townships in Riley county. To go farther in measuring the extent of relationship the study is extended to cover a wider area. While data on the value on farm products in Riley county had been obtained from the products of major importance, the study for the state includes all the minor products as well.

The total amount of farm products and the total amount of the assessed value of farm property for each of the 105 counties of the state covering the year 1924, 1926, 1928, and 1930 have been obtained from the biennial reports of the State Board of Agriculture. Similar methods as used in measuring the extent of relationship in the two values for Riley county were used to measure the extent of relationship existing between the two variables for the state.

PERCENTAGE RATIO

The percentage ratio for the total value of farm products and amount of assessed valuation for each county,

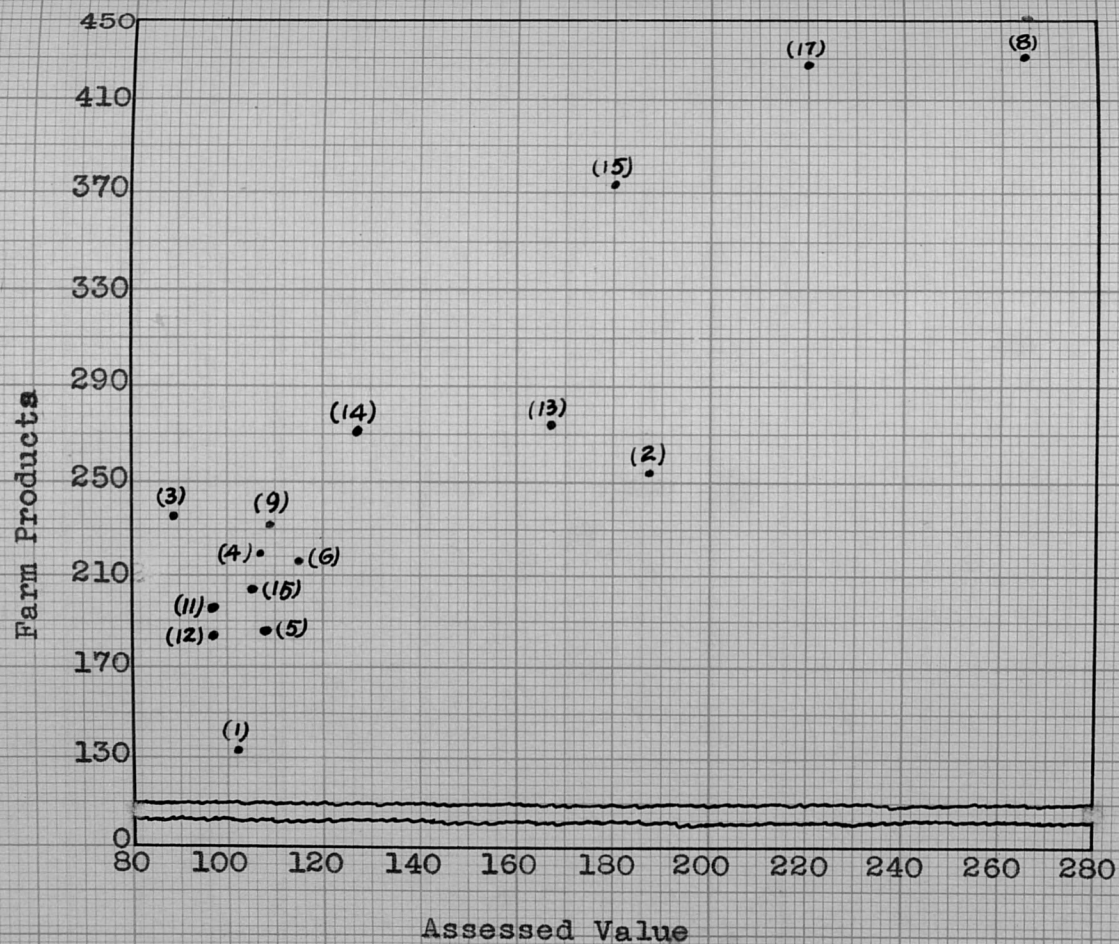


Fig.12. Scatter diagram of the value of farm products and assessed valuation.
Value on five year average in 15 townships, Riley County, 1924-1928.

has been computed on two bases; one on the ratio of the value of crops to the assessed value and the other on the value of both crops and livestock to the assessed valuation. The results of the percentage ratios are shown by the maps of Kansas in Figure 4, and Figure 5 shows the frequency distribution on the percentage ratio reduced to the graphed form. For the ratios on the value of crops and livestock to the assessed value in the frequency distribution in Table IX, 20 to 25 per cent is about the state mean average although the ratio actually ranged from about 10 percent to 50 per cent. Only 57 out of the 105 counties are under 25 per cent in ratio and 56 counties have less than 15 per cent in ratio. The arithmetical average ratio for the four year period is 18.3 per cent for value of crops alone and 26.1 per cent for all farm products.

MEASUREMENT BY THE INDEX NUMBER

As was done with the study for Riley county, the total amount of farm products and assessed valuations were computed for each of the years 1924, 1926, 1928, and 1930 for the state. Table VI shows the total value of both farm products and assessed valuations for the state in stated years. The value of products and assessments for 1924 were used as 100 per cent. Figure 6 shows the graph on trends of both values since 1924. Again we find that assessed valuations

CHEYENNE 38.7 30.7	RAWLINS 41.5 34.2	DECATUR 24.7 18.7	NORTON 31.7 19.7	PHILLIPS 26.7 18.	SMITH 21 12.5	JEWELL 24. 13.5	REPUBLIC 20.5 11.2	WASHINGTON 22. 12.2	MARSHALL 20. 12.5	NEMAHA 20. 10.	BROWN 18.7 11.7	DONIPHAN 22.2 12.5			
SHERMAN 41.2 34.5	THOMAS 38. 31.5	SHERIDAN 30.2 25.7	GRAHAM 28.7 21.2	ROOKS 23. 17.5	OSBORNE 25. 17.7	MITCHELL 19.5 14.	CLOUD 25. 14.5	CLAY 26. 13.5	RILEY 24. 12.2	POTTA- WATOMIE 23.2 11.2	JACKSON 23.2 11.2	ATCHISON 18.5 12.2	JEFFERSON 23. 12.2	LEAVENWORTH 21.1 11.2	ANDOTTE
WALLACE 17.2 11.7	LOGAN 27. 20.7	GOVE 31.7 26.2	TREGO 36.2 30.	ELLIS 30.5 26.	RUSSELL 22.2 17.	LINCOLN 22. 14.	OTTAWA 23. 14.	DICKINSON 22. 12.2	WARAUNSEE 22.2 9.5	GEARY 12.2 31.5	MORRIS 14.2 14.2	LYON 24.2 11.5	OSAGE 28.5 14.	DOUGLAS 12. 85	JOHNSON 19.2 10.2
GREELEY 14.7 12.2	WICHITA 20.5 16.	SCOTT 25.2 20.2	LANE 35. 30.7	NESS 31. 26.5	RUSH 29.7 26.	BARTON 26.7 21.	ELLSWORTH 23.5 16.2	SALINE 22. 13.7	MCPHERSON 21.2 14.7	MARION 19. 12.	CHASE 17.7 8.2	COFFEY 24.5 16.	FRANKLIN 23.7 16.2	MIAMI 19.2 10.2	ANDERSON 23.7 13.2
HAMILTON 17 12.7	KEARNY 19.2 15.	FINNEY 28.2 23.2	HODGEMAN 25.9 21.5	PAWNEE 27.5 24.2	STAFFORD 25.7 17.2	RENO 26. 16.5	HARVEY 20.5 14.7	BUTLER 10.5 6.	GREENWOOD 12.5 5.5	WOODSON 21. 13.5	ALLEN 24.5 16.	BOURBON 27.2 11.7	CRAWFORD 17. 115	CHEROKEE 167 107	
STANTON 27. 24.5	GRANT 45.7 42.7	HASKELL 47.5 45.5	GRAY 46.5 43.2	FORD 39. 34.2	KIOWA 37. 29.	PRATT 29.7 25.5	KINGMAN 23.7 18.5	SUMNER 32.2 23.	COWLEY 18.5 9.5	ELK 23. 11.	CHAUTAUQUA 18.7 9.7	MONT- GOMERY 14.2 8.5	LABETTE 26. 14.		
MORTON 33.5 26.2	STEVENS 41. 37.7	SEWARD 43. 37.5	MEADE 45.2 38.7	CLARK 36. 30.5	COMANCHE 41. 33.	BARBER 28.2 20.2	HARPER 26.2 20.6								

Figure 4. The Ratio between the Value of Agricultural Production to its Assessed Valuation in Percent.

Upper figure-- The Value of Crops and Livestock to Assessed Valuation

Lower figure-- The Value of Crops alone over the Assessed Valuation

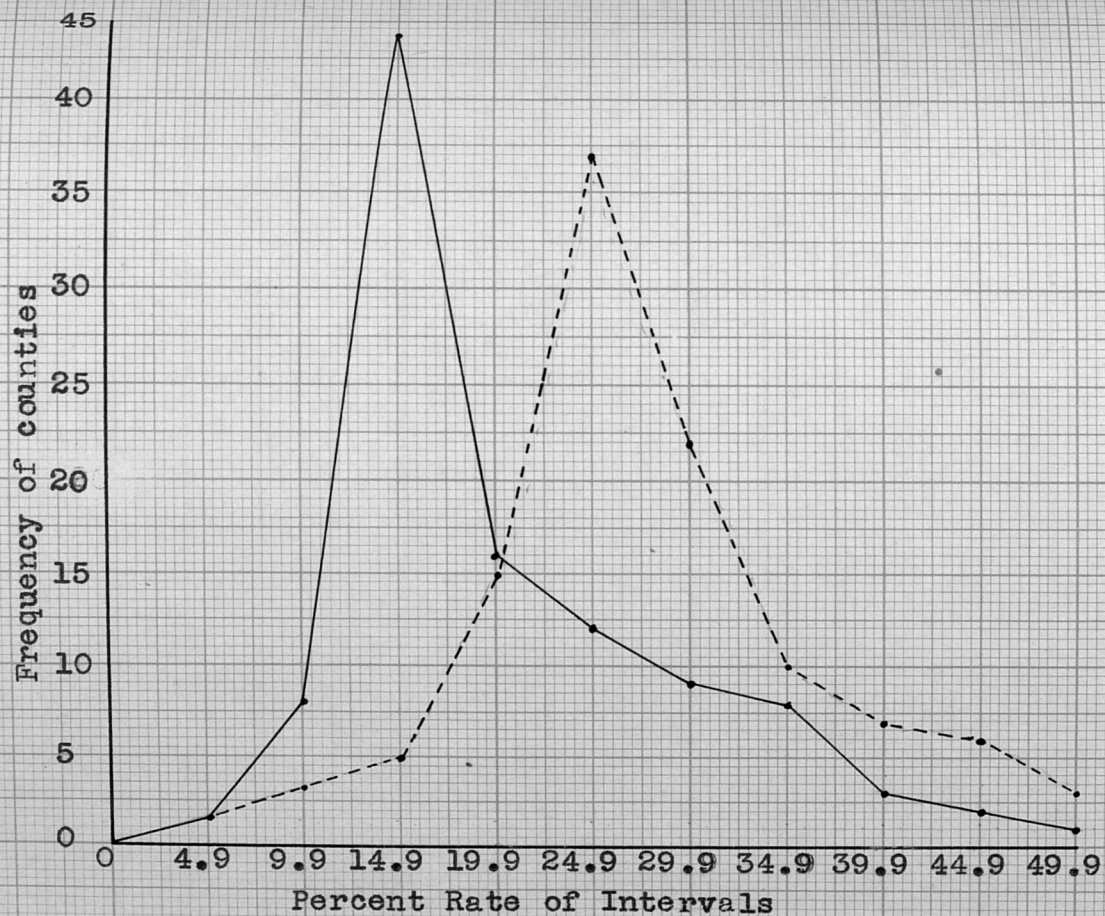


Fig.5. Frequency Distribution of Ratio of Value of Farm Products to Assessed Value. Average for 1924, 1926, 1928, and 1930.

— Ratio of crops value to assessed value; 105 counties.

- - - Ratio on crops and livestock to assessed value; 105 counties.

Table IX Frequency Distribution on the Average Ratio of Agricultural Products Value to Assessed Value for 1926, 1928, and 1930 for 105 Counties in Kansas.

Range of Interval on ratios %	Frequency on Ratio of Crop and Livestock to Assessed Value	Frequency on Ratio between crops value to assessed value.
0- 4.9		2
5- 9.9		8
10-14.9	5	44
15-19.9	15	16
20-24.9	37	12
25-29.9	22	9
30-34.9	10	8
35-39.9	7	3
40-44.9	6	2
45-49.9	3	1
Total	<u>105</u>	<u>105</u>

Table X. The Percentage Ratio of the Value of Farm Products to Its Assessed Valuation in Twelve Representative Counties of the Twelve Farming Areas in Kansas for the years 1924, 1926, 1928, and 1930.

Farming Area	County	% 1924		% 1926		% 1928		% 1930		% Average for four years	
		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
1.	Labette	18	26	14	22	14	26	10	30	14	26
2.	Anderson	18	26	15	24	13	24	8	21	13	24
3.	Douglas	14	22	11	21	14	24	9	21	12	22
4.	Brown	13	20	10	18	12	19	12	18	11	19
5.	Chase	11	19	8	17	9	21	5	13	8	18
6.	Kingman	19	23	27	31	19	23	10	18	19	23
7.	Lincoln	17	24	11	18	18	25	10	21	14	22
8.	Jewel	14	22	4	14	19	26	11	25	14	24
9.	Edwards	31	33	34	37	32	35	14	19	28	31
10.	Lane	37	39	23	26	44	47	19	28	30	35
11.	Thomas	37	41	14	19	53	58	22	34	32	38
12.	Hamilton	13	16	8	10	20	23	10	19	13	17

(1)- The Ratio of the Value of Crops to the Assessed Valuation.

(2)- The Ratio of the Value of Crops and Livestock to Assessed Valuation.

did not change very much. The index number for 1926 was 100.1, for 1928 was 99.5, and in 1930 it was 96.5. The index numbers for the value of farm products were 93.6 in 1926, 107.1 in 1928 and 80.1 in 1930.

Thus we can conclude here as was true with Riley county that the increase and decreases for both values are not proportional. There is a tendency for the two values to follow the same trend but the trend of the value of farm products is very unstable. That is to say that while both values were headed downward in 1930, the amount of farm values showed very abrupt change compared to the change found in the assessed valuations. In 1926 the amount of farm products was 6.4 points lower than in 1924 while assessed values were about the same. In 1928 value of farm products went up 7.1 points more than 1924 while the amount of assessed values was the same. In 1930 both variables were on the decrease but the value of farm products was considerably lower than the assessed value. In no case in the four periods has there been any degree of proportional increase or decrease in the two values.

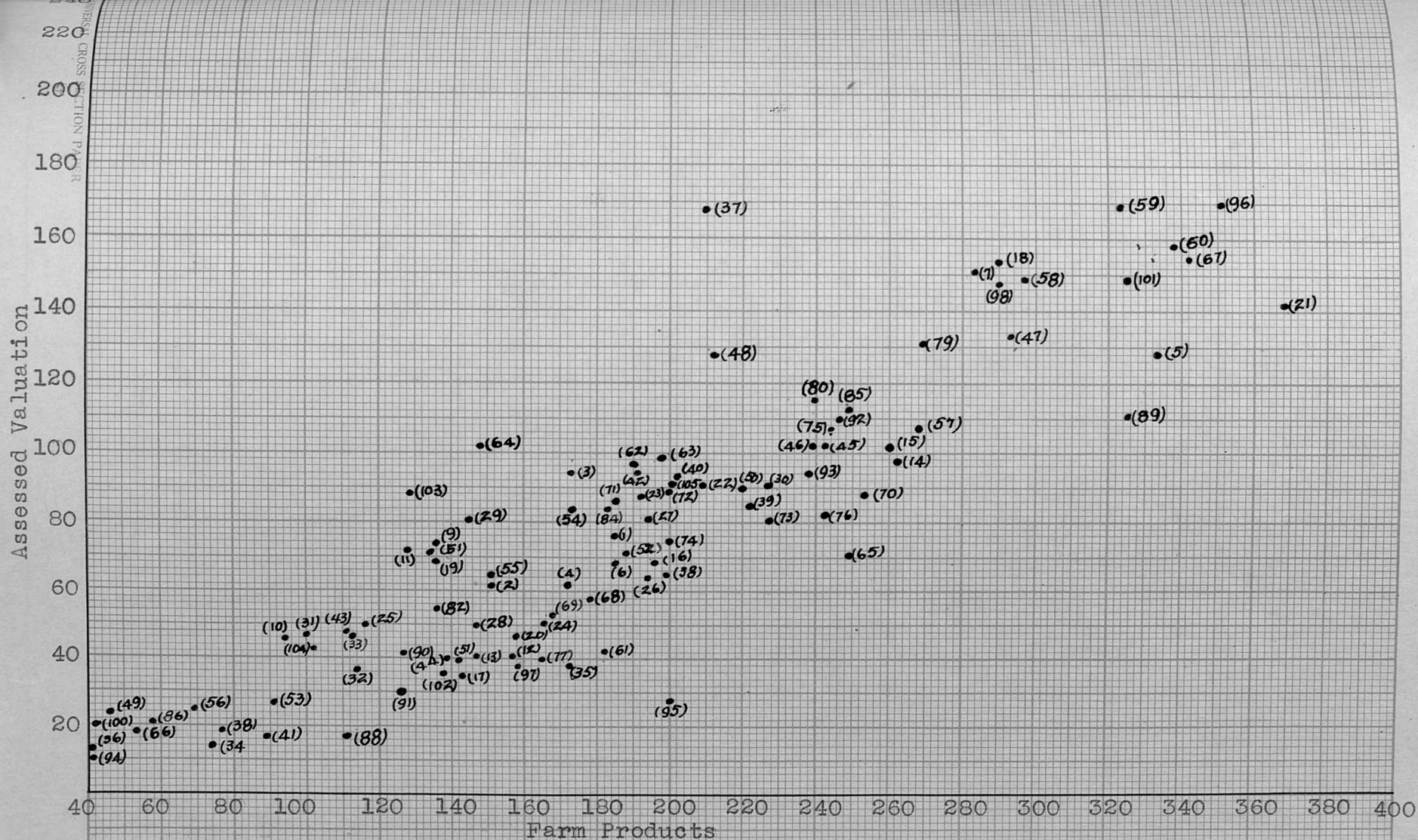
Correlation Coefficient as a Means of Measuring the Degree of Relationship Between the Value of Farm Products and Assessed Values of Farm Property in Kansas.

In the study of coefficient of correlation of the state it was necessary to make the study of only a few counties, representing the farming areas of the state. A county was selected from each one of the twelve areas. Thus data from each of these 12 counties were computed and the coefficient of correlation was obtained. Table VIII shows the results for the given years. Correlation coefficients were as

follows: 1924----.313
1926----.501
1928----.174
1930----.395

The above results are far from the results obtained in the study for Riley county. The coefficients of correlation obtained for Riley county are higher and showed a high degree of relationship.

A scatter diagram showing the total value of farm products for the whole period 1924, 1926, 1928, and 1930, for each of the 105 counties of the state and the assessed valuations are shown in Figure 13. This plot of the associated pairs of variables shows a tendency for the points to form a straight line or band across the graph which furnishes graphical evidence of linear correlation. The correlation as it appears in the cluster of points forming a straight line does not seem to be very high although there is a tendency for the points to cluster.



The results found in the twelve representative counties of the state shows a greater degree of relationship between the two values.

Tax Delinquency and Its Relation to the Existing
Relationship Between the Value of Farm Products
and the Assessed Value of Farm Property.

The ratio of delinquency to the amount of taxes is computed and results are shown on the map of Kansas with the percentage of delinquent real estate taxes for 1928 and 1929. Figures 9, 10, and 11 show the percentages of delinquencies. Judging from the spreads in the counties reporting on the amount of delinquent taxes, the state of Kansas as a whole shows a tremendous increase in tax delinquencies. It will be noted that the crop farming areas, especially the western wheat belt had the greatest increase of tax delinquencies in 1931. There is a good reason to believe that as the price of farm commodities dropped the wheat farmer was more handicapped in paying his taxes. The graph on the trend of assessed valuation in 1930 compared to that of the value of farm products clearly explains why such a tremendous rise in tax delinquencies had occurred. Again looking back into the results found in the ratios of the value of crops and livestock to the assessed valuation, for all the

Figure 9

Percent of Delinquent Taxes on Farm Real Estate for years 1928 and 1929 in 53 counties from all the farming areas of Kansas.

Top figure--percent of delinquency in 1928

Lower figure--percent of delinquency in 1929

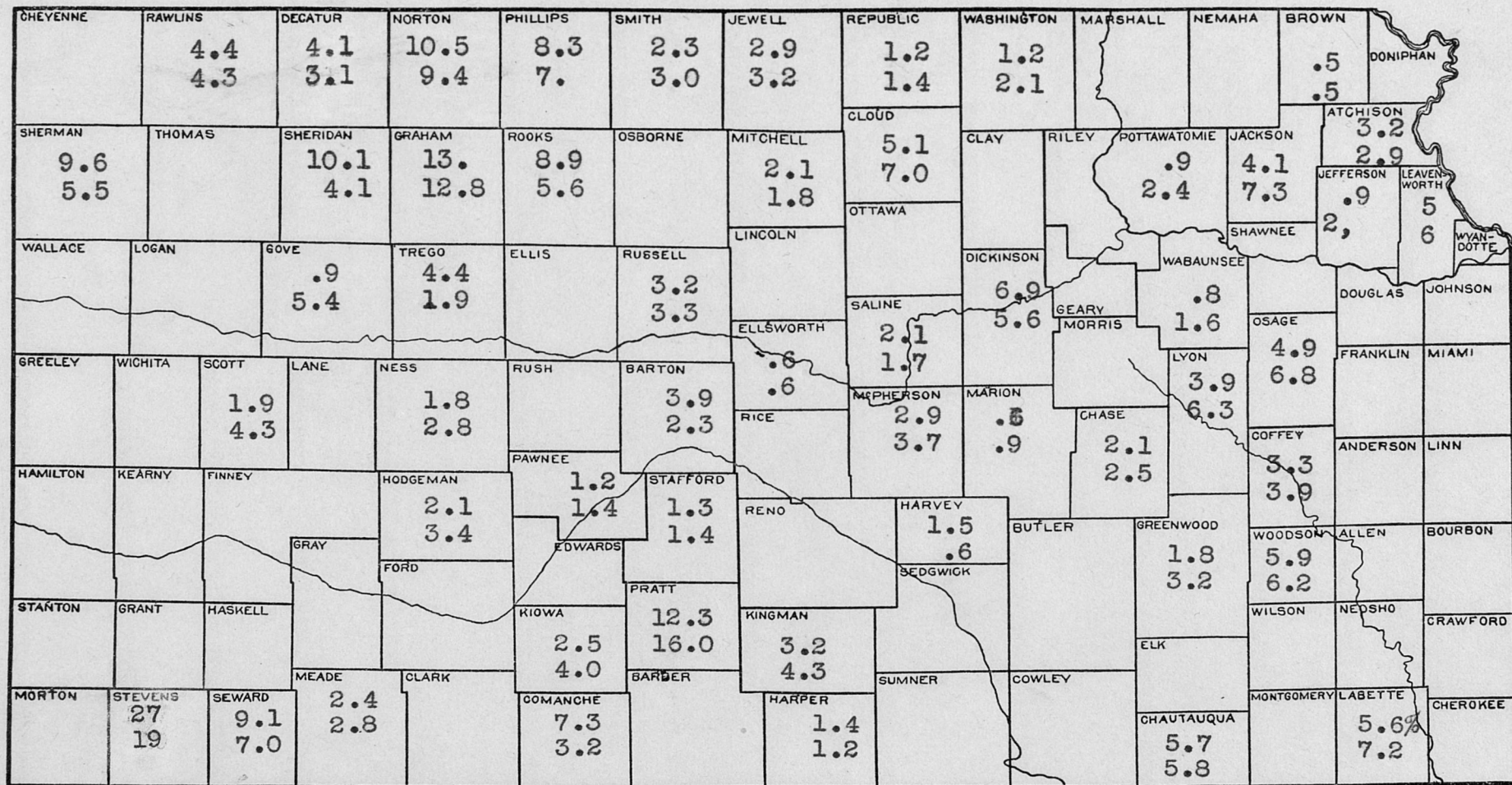


Figure 10 Percent of Delinquent Taxes on Farm
Real Estate in certain Kansas Counties 1931

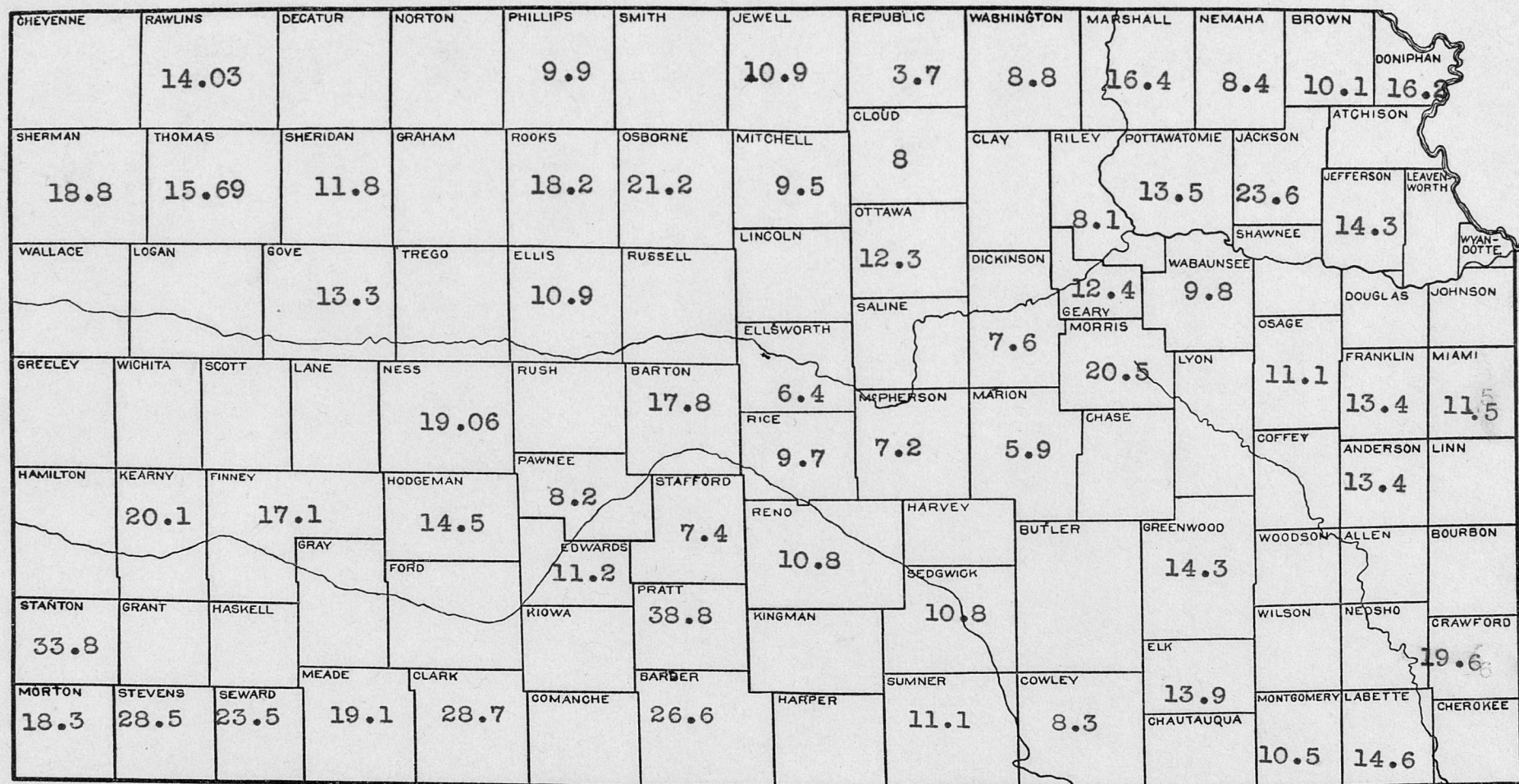


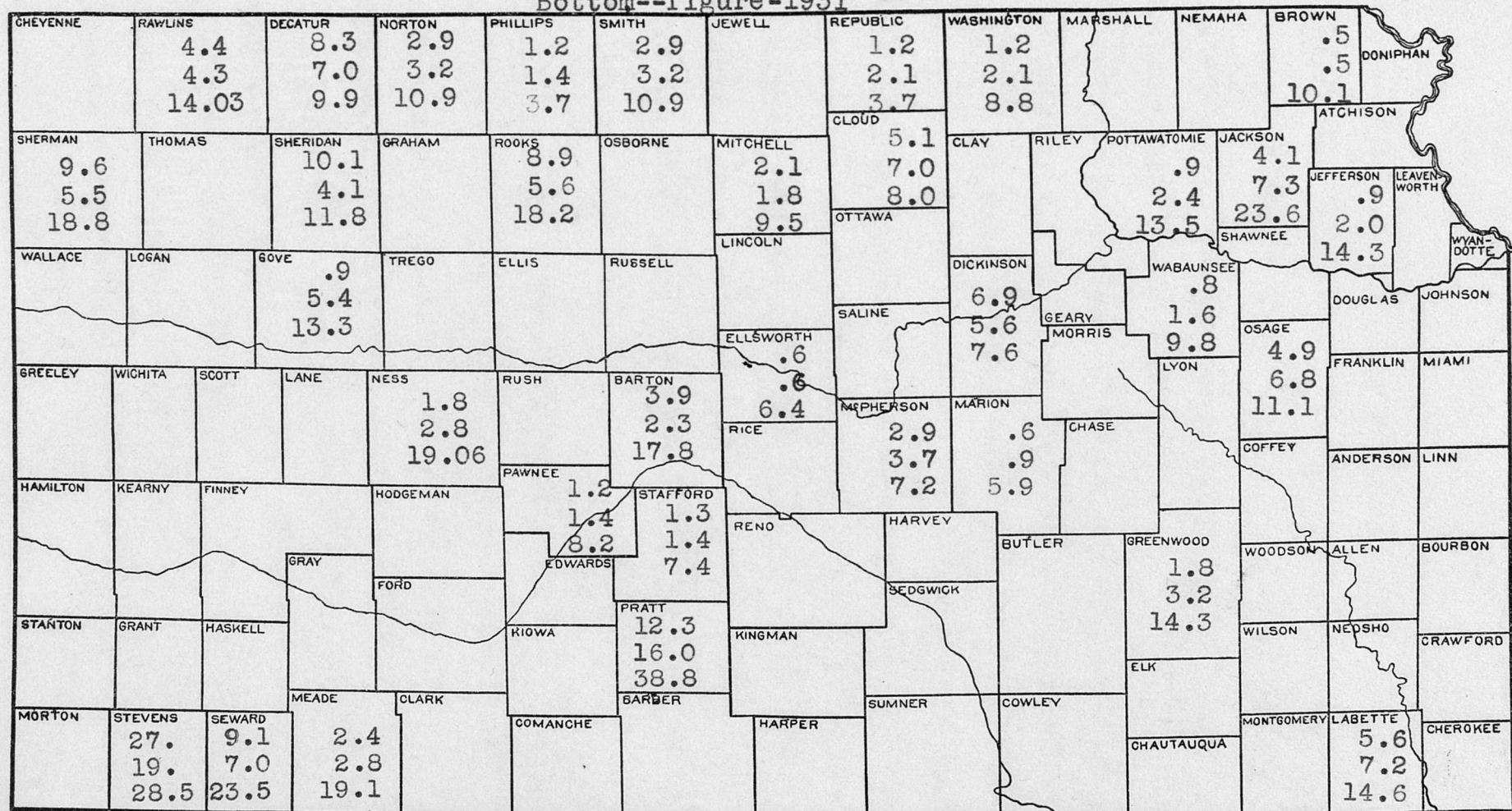
Figure 11. Percent of Delinquent Taxes in Farm

Real Estate in certain Kansas Counties

Top--figure-1928

Middle--figure-1929

Bottom--figure-1931



years 1924, 1926, 1928, and 1930, one finds that the farmer whose income was mostly from crops has lower percentage ratios, especially in 1930, when the prices of farm products were then on their way downward.

The results of percentage delinquency for 1931 obtained from 33 counties, all of which were included with the list of counties which reported delinquencies for 1928 and 1929 are shown in the map of Kansas (Figure 10) the counties for which data were obtained are well scattered and come from all of the twelve farming areas of the state. It is seen that the highest percentage of delinquency for 1931 was 38.8 per cent. As a rule the higher percent of farm real estate tax delinquencies come from the western half of the state of Kansas.

GENERAL SUMMARY AND CONCLUSION

As a result of the different measures used in the study to find the existing relationship between the total value of farm products and the assessed value of farm property, the study in Riley county shows conclusively that a distinct relationship exists for some years, especially in 1924, 1926, and 1928. The percentage ratio fluctuates from year to year and from township to township. The percentage ratio in Riley county ranged from 3.6 per cent to 42 per cent.

It was seen that in years of high farm commodity prices, both factors, value of farm products and assessed values, have a tendency to follow the same trend but the values of farm products behave in such a way that there is no proportional increase or decrease between the two values.

As for the state as a whole, all the four methods used in measuring the existing relationship in the two values show no degree of relationship. Results in percentage ratios for all the counties of the state were very irregular, fluctuating from year to year for all the counties. Percentage ratios range from 4.9 per cent to 49.9 per cent. The amount of farm products and the assessed valuations for each of the years 1924, 1926, 1928, and 1930 were not proportional as shown in the index numbers and graph made in Figure 6.

The coefficient of correlation results show no relationship between the two values. The coefficients of correlation were as follows:

1924----	.313
1926----	.501
1928----	.174
1930----	.395

The scatter diagram for both Riley county and the state shows a small degree of relationship. (Figure 12 and 13.)

Tax delinquency for the state has increased in 1931 in some counties to a point ten times as large as in 1928.

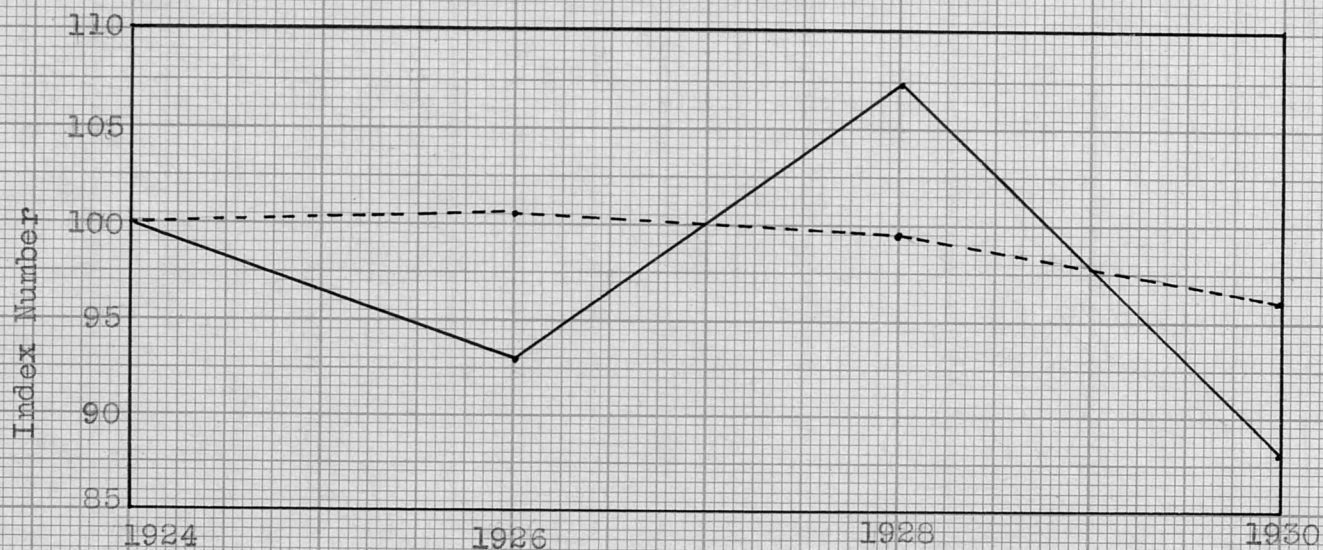


Fig.6. The Relation of assessed valuation of farm property in Kansas and the value of its products in Kansas in 1924, 1926, 1928, and 1930.

— Index number of production value in Kansas 1924-1930.
 --- Index number of assessed values in Kansas in 1924-1930; 1924=100.

Table V. Relation of Assessed Valuation to Production for the years
1924 to 1928 in 15 townships in Riley County.

	Assessed Value Total	Agriculture Prod. Total	Ratio %	Products Ass. Value
1924	21,607,470	4,175,833.40	19.32	
1925	19,295,595	3,263,080.41	16.04	Mean-18.48
1926	19,928,980	4,023,912.87	20.19	S.D.-1.99
1927	19,928,980	3,181,288.56	16.10	Coefficient-10.7
1928	21,637,085	5,941,374.80	20.74	

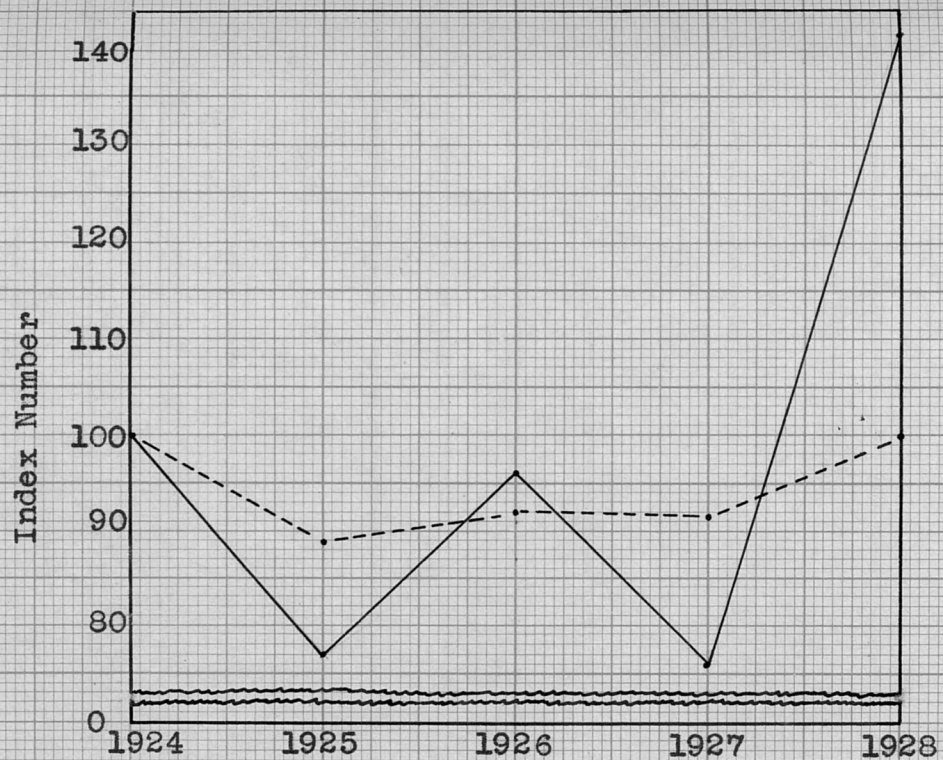


Fig. 3. The Relation of Assessed Valuation of Farm Property in Riley County to the Value of it Production in the years 1924 to 1928 by index numbers. (1924=100)

—— Production.
 ---- Assessed value.

Most of those counties having a high percentage of tax delinquent farm real estate are found in the western half of the state where the major portion of the incomes are derived from crops.

The twelve farming areas are described in the Kansas Experiment Station Bulletin number 251 (Types of Farming in Kansas). The most important characteristics of the prevailing type of farming in each area are as follows: The first three areas are characterized by general farming, while Areas 4 and 8 constitute the greater portion of the corn belt of the state. Areas 6, 7, 9, 10, and 11 are wheat farming areas; and Areas 5 and 12 are primarily grazing regions.

The farming areas 1, 2, 8, 9, 10, and 11 show the greatest percentage of delinquency for the years studied. In the years of high farm commodity prices, farm real estate tax delinquency is insignificant while during the years of low farm commodity prices, it increases rapidly. The crops farming sections are as a rule hard hit by the downward trend of farm price with no proportional decrease in the amount of assessed valuations.

It is to be concluded that there is no short time relationship existing between the value of farm products and the assessed value of farm property. The fact is that

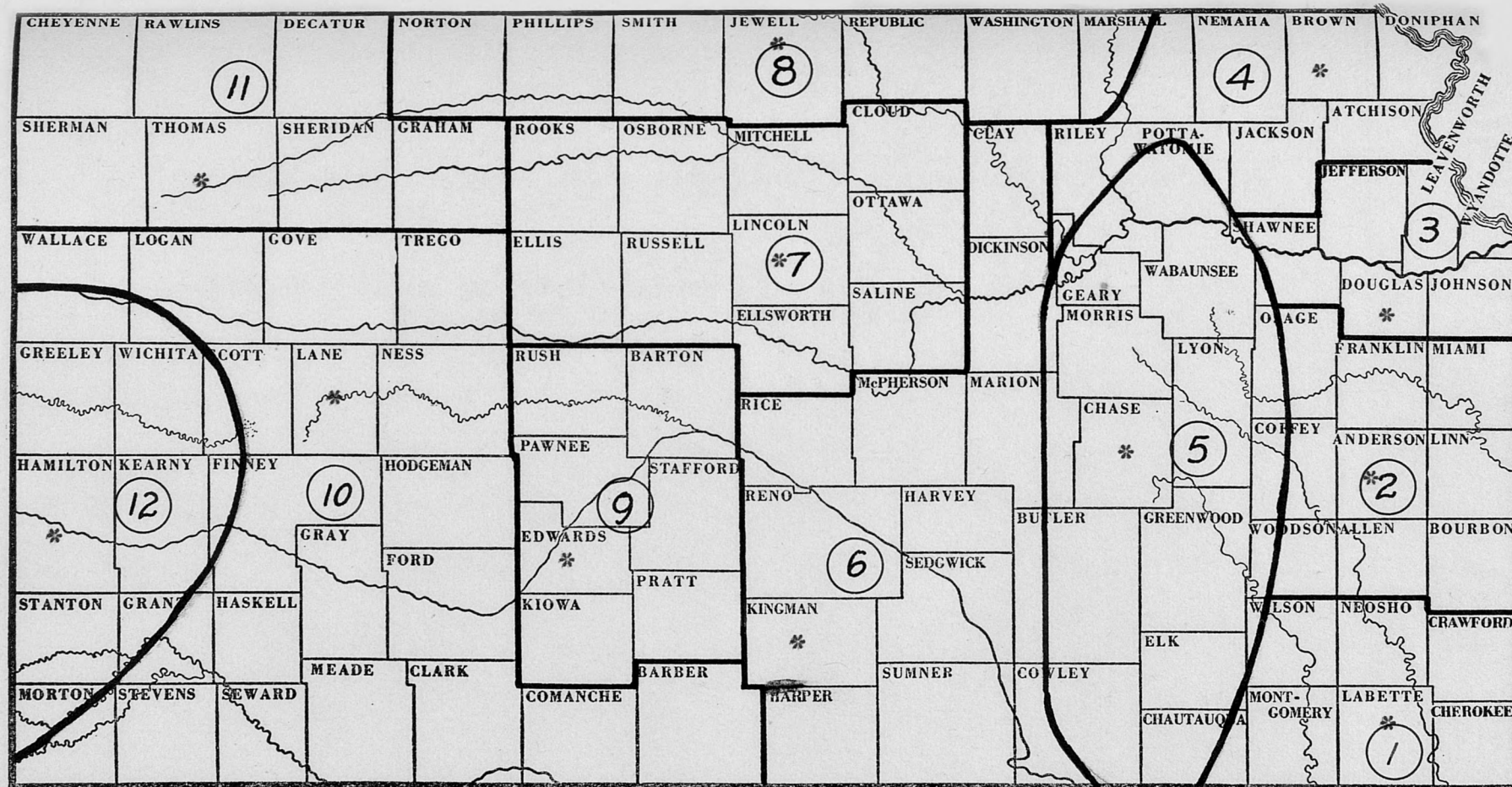


Figure 8. Map of Kansas Showing the Twelve Farming Areas.

*-- Counties representing each area for the study of Coefficient of Correlation for the State of Kansas.

Table VI.

The Amount of Assessed Value and Value of Agricultural Products in
105 counties for the years 1924, 1926, 1928, and 1930.

	Value of Crop	Value of Crops & Livestock	Index No.	Assessed Value	Index No.	Ratio of Ag. Products <u>Assessed Value</u>
1924	384,157,238	501,629,566	100	2,155,017,360	100	23.2%
1926	321,035,317	469,488,858	93.6	2,155,867,431	100.4	21. %
1928	387,536,368	537,429,753	107.1	2,140,092,810	99.5	225.1%
1930	232,280,171	441,522,240	80.1	2,075,372,601	96.5	21. %



Fig. 7. Ratio of Value of Farm Production to Assessed Value in 105 counties in 1924, 1926, 1928, and 1930.

— Ratio of crops and livestock value to assessed value.
 --- Ratio of crops value to assessed valuation.

assessors do not appraise farm real estate on the basis of its current earnings.

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Appendix

Table I. Showing the Items on Production listed in the Assessor's Roll Book.

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